

TESTIMONY OF

GUY CARUSO

**ADMINISTRATOR
ENERGY INFORMATION ADMINISTRATION**

U.S. DEPARTMENT OF ENERGY

before the

COMMITTEE ON ENERGY AND COMMERCE

U.S. HOUSE OF REPRESENTATIVES

September 6, 2005

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to discuss gasoline prices in the United States and recent developments in world oil markets.

The Energy Information Administration (EIA) is the independent statistical and analytical agency within the Department of Energy. We are charged with providing objective, timely, and relevant data, analysis, and projections for the Department of Energy, other government agencies, the U.S. Congress, and the public. We do not take positions on policy issues, but we do produce data and analysis reports that are meant to assist policymakers determine energy policy. Because the Department of Energy Organization Act gives EIA an element of independence with respect to the analyses that we conduct and publish, our views should not be construed as representing those of the Department of Energy or the Administration.

The devastation of Hurricane Katrina included offshore production, refineries, and loss of power to run pipelines and otherwise-working refineries. Damage assessments are ongoing but still incomplete. With the current tight global petroleum market, gasoline and distillate prices have risen sharply. How far and how long they remain elevated will depend on the severity of damage to petroleum facilities. Our understanding of the situation is rapidly evolving, and I will discuss this in my oral remarks. This written testimony focuses on events prior to the hurricane and challenges to gasoline markets following the recovery.

Even prior to Hurricane Katrina, petroleum prices, including gasoline, were setting new records as crude oil prices climbed. Gasoline prices as of August 29 were \$2.61, which was 73 cents per gallon higher than a year ago, and, on average for the

month, were 58 cents per gallon higher. Yesterday's prices, which will be released late this afternoon, will undoubtedly be much higher given the significant disruptions experienced due to Hurricane Katrina. A consumer who drives about 1,000 miles per month in a car that gets about 20 miles per gallon paid almost \$30 more for that car's fuel during August this year than last August. Businesses and government budgets are also affected, as it costs more to fill their vehicle fleets.

The remainder of this testimony describes the fundamentals affecting petroleum prices, focusing on crude oil and gasoline. The underlying market situation today, even before Katrina, is one in which the spare crude oil production, refinery, and tanker capacities that existed for more than a decade prior to 2003 were reduced more quickly than EIA or other analysts anticipated. Little spare capacity, both upstream and downstream, not only supports higher prices, but they also add to price volatility, since any upset to supply/demand balances regionally cannot be resolved quickly. Restoring spare capacity will not be easy or rapid, because an increase in capacity takes time and investment, and growing demand will require capacity increases just to maintain current cushions, which suggests that high prices and potential volatility will be with us for some time.

Changes in the gasoline price at the pump are driven mainly by changes in crude oil prices and changes in wholesale gasoline prices. Crude oil cost represented nearly 60 percent of the gasoline price this summer and explains much of the variation in gasoline price. Crude oil prices are driven and set by international markets. The wholesale price of gasoline or its spot price is influenced first by crude oil but also by seasonal demand

variations and by regional refinery and distribution supply and demand balances. Retail price changes generally lag behind wholesale price changes.

International Crude Oil Markets

Turning to crude oil prices first, **Figure 1** shows that the current crude price increase began in 2004, when crude oil prices almost doubled from 2003 levels, rising from about \$30 per barrel at the end of 2003 to peak at \$56.37 on October 26, 2004. After falling back briefly, prices then continued to rise in 2005.

This is a significant change from what we experienced during much of the 1980s and 1990s. For most of the time since the early 1980s, we have lived in a market in which spare crude oil production, refining, and delivery system capacity existed. Crude oil suppliers outside of the Organization of Petroleum Exporting Countries (OPEC) produce at maximum rates (i.e., no surplus production capacity) for economic reasons, thus, the world's surplus crude oil production capacity resides in OPEC (mainly Saudi Arabia). The large growth in non-OPEC capacity and production in areas like the North Sea and Alaskan North Slope, along with softening demand from high prices, led to major cuts in OPEC production in the 1980s, creating large capacity surpluses. As demand grew through the 1990s, OPEC production increased, but new productive capacity was not added. Short-term imbalances between supply and demand occurred and we experienced some price swings, but those imbalances did not last long, as capacity generally existed to remedy the situation within a year.

During most of the 1990s, the West Texas Intermediate (WTI) crude oil price averaged close to \$20 per barrel, but plunged to almost \$10 per barrel in late 1998 as a

result of the Asian financial crisis slowing demand growth, at the same time as extra supply from Iraq was entering the market for the first time since the Gulf War. OPEC producers reacted by reducing production, and crude oil prices not only recovered, but increased to about \$30 per barrel as demand grew in the face of OPEC production discipline.

Beginning in 2004, world oil demand growth accelerated significantly. For the 10 years prior to 2004, world oil demand growth had averaged 1.2 million barrels per day. But in 2004, world demand jumped by 2.6 million barrels per day, led by an unprecedented increase in demand from China of about 1 million barrels per day, compared to that country's increase of 0.4 million barrels from 2002 to 2003. This unusually rapid demand growth along with growth in the United States and the rest of the world, quickly used up much of OPEC's available surplus crude oil production capacity (**Figure 2**). As the world balance between supply and demand tightened considerably, ongoing supply uncertainties associated with Russia, Iraq, and Nigeria added to market concerns over the availability of crude oil, and prices rose. In 2005, Iran, Ecuador, and Venezuela added new uncertainties.

Global oil demand is expected to grow more slowly during 2005 and 2006, increasing by about 1.7 to 1.8 million barrels per day. China's demand is projected to increase by 0.5 million barrels per day and U.S. demand by 0.4 million barrels per day in 2006. Together, these two areas are projected to account for about 50 percent of the world's petroleum demand growth next year.

Crude oil production capacity increases are expected to keep up with these demand increases. Production increases from OPEC members are projected to represent

almost one-third of the world production growth next year, and the former Soviet Union is expected to provide an additional 40 percent of the increase. Other areas such as the United States and other non-OPEC countries will provide additional production volumes. However, EIA is not projecting much increase in the surplus capacity cushion any time soon. Spare capacity is projected to remain at or below 1.2 million barrels per day in 2005.

We are facing tight crude oil markets for a number of years. EIA's *Short-Term Energy Outlook* is projecting WTI crude oil prices to remain above \$55 through 2006. Even if demand softens or capacity is developed faster than anticipated, statements from OPEC members indicate an intention to keep prices from falling below \$50 per barrel. While high relative to recent years, the price of crude oil, adjusted for inflation, is still below the levels seen in the early 1980s.

This tight balance results in different behavior and price implications than exhibited by the short-term market imbalances seen for the past 20 years. Instead of high prices being accompanied by low inventories and expectations for prices to be falling quickly in the future, today, in both crude oil and product markets, we see high prices with high inventories. Consumers exhibit similar behavior when they expect to experience higher prices in the near future. For example, consumers top off their gasoline tanks before a bad storm that could limit supplies and drive prices up in their region.

Prior to Hurricane Katrina, crude oil prices increased about 39 cents per gallon in summer 2005 over summer 2004, while gasoline prices only increased 34 cents per gallon (**Figure 3**). Although refinery and distribution and marketing contributions to

gasoline prices were on average lower this summer on average than last summer, seasonal and local supply conditions affected these refinery contributions to price gasoline more strongly at the end of the summer, as described next.

U.S. Product Markets

Tightening in other parts of the supply chain beyond crude oil exacerbated product price increases in the United States and in the rest of the world. World refining capacity utilization increased from 85 percent to 87 percent from 2003 to 2004, driven in large part by increases in demand and utilization in areas like China and India. While adequate refining capacity is available to meet demand today, the refining system cannot shift quickly to meet unexpected needs. With refinery capacity running at high utilization levels in many parts of the world, including the United States, product balancing is frequently done through international trade, which means products must travel long distances, stretching out the time it takes to resolve imbalances. This sluggish response puts additional pressure on product prices beyond the effect of high crude oil prices and can result in price spikes if a regional shortage evolves.

Product markets in the United States provide an example of various supply and demand balancing effects on price. In the United States, the spread between wholesale product prices and crude oil prices is often higher in spring and summer than during the rest of the year. Gasoline is the highest volume product refineries produce, and spring and summer are when gasoline demand is typically the highest. Gasoline spreads typically increase at this time of year, lifting overall refinery margins to their highest seasonal

level. Distillate product (diesel and heating oil) spreads are usually lower in spring and summer, but they represent only about half as much volume as gasoline production.

U.S. petroleum product price spreads were very unusual in spring and summer 2005. Wholesale gasoline price spreads through July were slightly above the average for the past 5 years, but lower than spreads seen in 2004. Heating oil and diesel spreads were unprecedented, exceeding gasoline spreads from April through July. This unusual distillate market was seen throughout the world as distillate demand grew rapidly and ultra-low sulfur diesel demand in Europe pulled on tight supplies. Distillate prices remained above gasoline prices in Europe as well as Asia. This unusual distillate market ultimately affected gasoline.

Gasoline and distillate products are produced together at the same refineries. In the spring, the U.S. inventories for gasoline were high and prices were lower than for distillates. Distillate inventories were low, and the price incentives caused refiners to respond by producing unusually high yields of distillate, which resulted in reduced gasoline yields. The consequence was that U.S. distillate inventories rose from below normal to above normal, and gasoline inventories fell from above normal to normal into July.

In addition to the switch in yield patterns, unplanned refinery outages in July and August added to the tightening gasoline market. The high demand summer season is when U.S. refiners run close to or at full utilization rates, but outages always occur. The degree of outages varies, and preliminary data indicate a higher level than average occurred in July and August of this year. Had refineries been able to run at the same utilizations as last year, they would have run about 200 thousand barrels per day more

crude oil, and the gasoline inventories in the July/August period would now be in the middle of their seasonal range, even with the higher-than-usual distillate yields.

The loss of supply and rapid decline in gasoline inventories starting in July resulted in an increase in gasoline price spreads (**Figure 4**). Higher gasoline spreads encourage more gasoline imports, and some refiners may have shifted yields to produce more gasoline, but with the peak summer driving season at an end, and winter heating needs ahead, we would expect a continued focus on maximizing production of distillates.

The high level of refinery outages in July and August increased pressure on gasoline prices, adding possibly 8 to 15 cents per gallon. Wholesale prices were poised to decline as some of the refinery problems were being resolved, but then the Gulf Coast was hit by Hurricane Katrina. Both spot market prices and near-month futures prices for gasoline and distillate products have risen dramatically in the days following the hurricane. Retail prices, which follow wholesale prices with a lag, are also rising. We expect that prices will begin to fall back as production and refining capacity are restored, although the pace of restoration is at present highly uncertain. While the gasoline price and supply situation will also be helped by the seasonal decline in U.S. gasoline demand after Labor Day, seasonal trends in crude oil markets will work in the opposite direction as world crude oil demand begins to increase in the fall with the onset of the Northern Hemisphere heating season.

Looking ahead to next summer, high crude oil prices are expected to continue to support high prices for all petroleum products, including gasoline. In addition, gasoline prices may see some additional pressure since the industry is moving quickly to eliminate methyl tertiary butyl ether (MTBE). While the removal of the oxygen content

requirement in the recently-enacted Energy Policy Act of 2005, without some accompanying liability protection, may have hastened companies' decisions to remove MTBE, companies were moving in that direction anyway. Removing the oxygen content requirement will help consumers in the long run by providing more supply options for refiners and blenders. In the short run, however, the loss of gasoline production capability and some potential sources of gasoline imports that will occur when phasing out MTBE cannot be made up easily. The distribution system will also have to adjust, depending on how the industry shifts. The result is that we may see increased volatility during the transition, as we have seen with other fuel specification transitions.

In addition to potential supply problems due to removal of MTBE, the United States will begin the ultra-low sulfur diesel program. In June 2006, suppliers will begin providing diesel fuel to the on-road market that contains less than 15 parts per million sulfur. Following a full recovery from Katrina, production capability to produce ultra-low sulfur diesel is felt to be adequate, but the industry is still struggling to determine how to deliver the product through its pipeline and storage tank system without contamination. Many issues remain to be resolved, implying this transition may also add pressure to the system, and can be expected to affect gasoline as well as distillate prices.

Next year is also the first year of the renewable fuel standard established under the new energy bill, and while meeting the total volumes of ethanol required under this standard should not be difficult, a credit trading program must be in place and operating smoothly to enable each gasoline supplier to meet its obligation. It is our understanding that Environmental Protection Agency (EPA) and the industry are working towards this goal, but little time exists for EPA and the industry to get everything prepared.

One more specification change slated for 2006 is the final phase of the Tier 2 low-sulfur gasoline program for refiners and importers, who will be providing gasoline with an average sulfur content of 30 parts per million or less, which is less than one-tenth the average sulfur content before the program began. With many refiners already producing gasoline at 30 parts per million, this last phase may be less challenging than the removal of MTBE and the start of ultra-low sulfur diesel. It is one more additional strain on the supply system, however. For example, if a refinery loses a desulfurization unit, the stricter specifications may result in no production of gasoline, whereas, in the past, the refinery might have been able to produce more volumes at higher sulfur levels for a longer time.

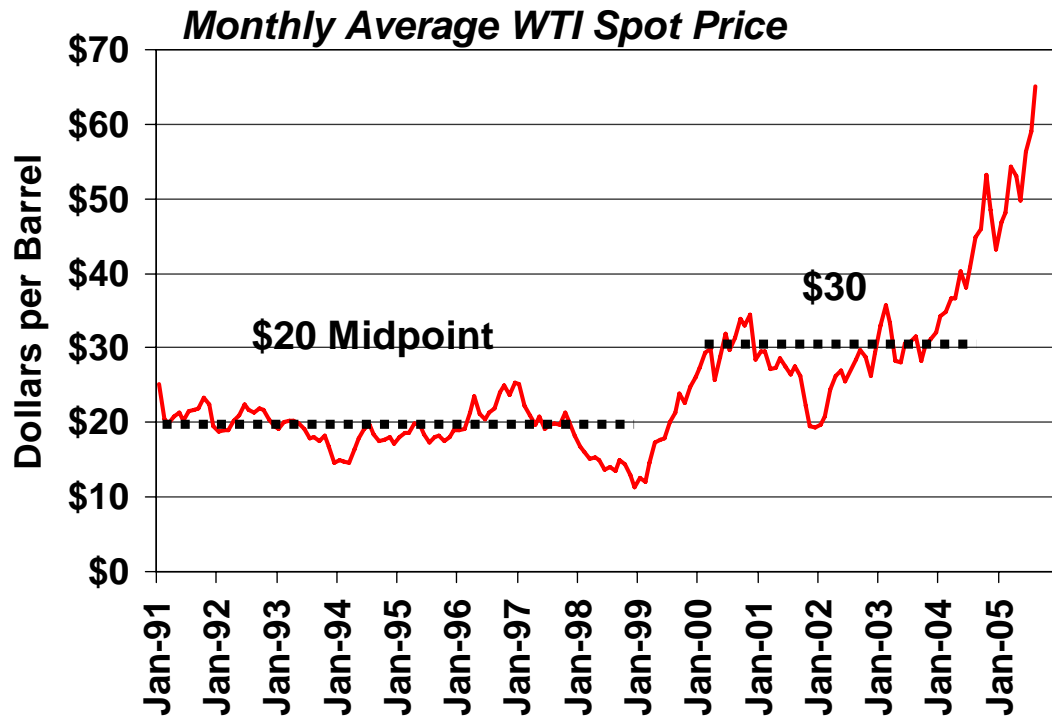
Conclusion

In conclusion, the world is experiencing an underlying change in petroleum markets with the development of tight supplies that will not likely change quickly. Hurricane Katrina has significantly exacerbated the near-term supply tightness, especially in the U.S. market for gasoline and diesel fuel. Even after production and refinery operations fully recover from the effects of Katrina, capacity increases will be needed throughout the supply chain to keep up with demand. Until the world returns to more spare capacity, particularly in crude oil supply, crude oil and petroleum product prices will remain high. Even if the balance should relax unexpectedly, OPEC members have expressed an interest to maintain prices well above their prior target range. While the system currently can meet demand, it cannot respond quickly to unexpected changes. We will see shifts in imbalances from one region of the world to another and from one

product to another, as we saw with gasoline and distillate in the United States. The gasoline market in the United States is subject not only to the higher crude oil prices and generally tight market conditions, but also to volatility from continuing specification changes down the road, with next summer presenting a number of such specification challenges.

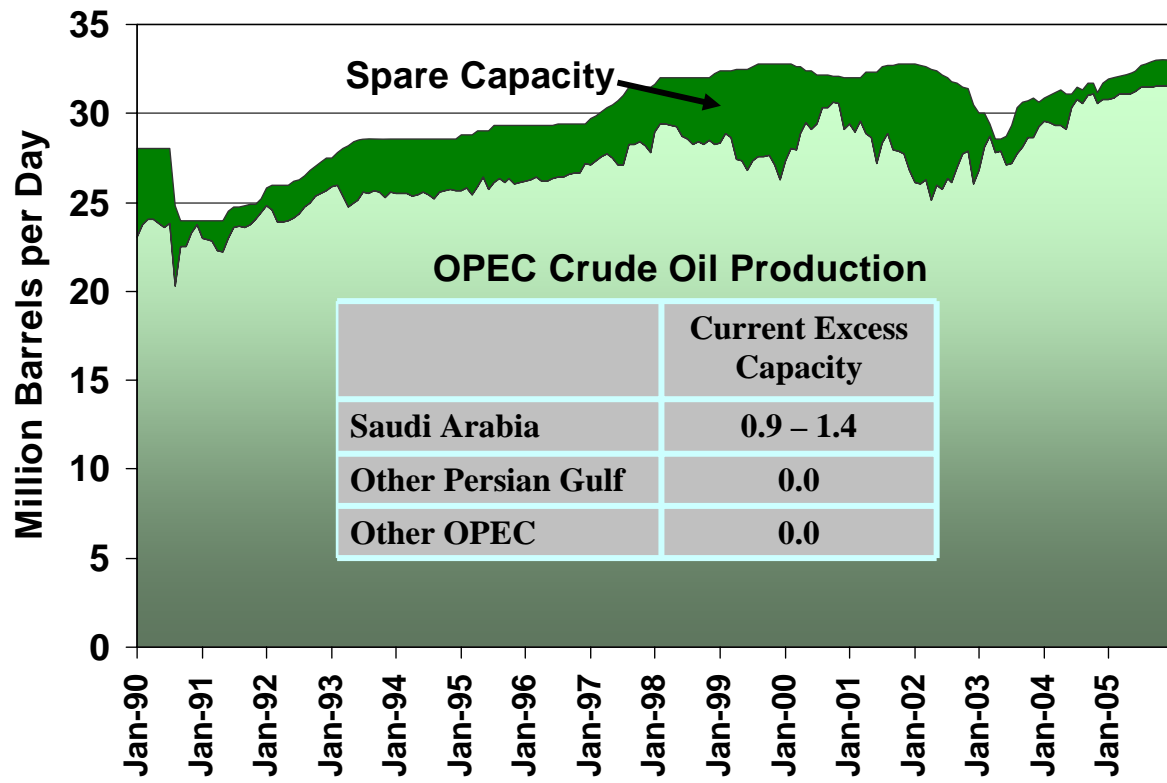
This completes my testimony, Mr. Chairman. I would be glad to respond to any questions you and the other Committee members may have.

Figure 1. Crude Oil Prices Rose Rapidly in 2004 & 2005



Source: Reuters

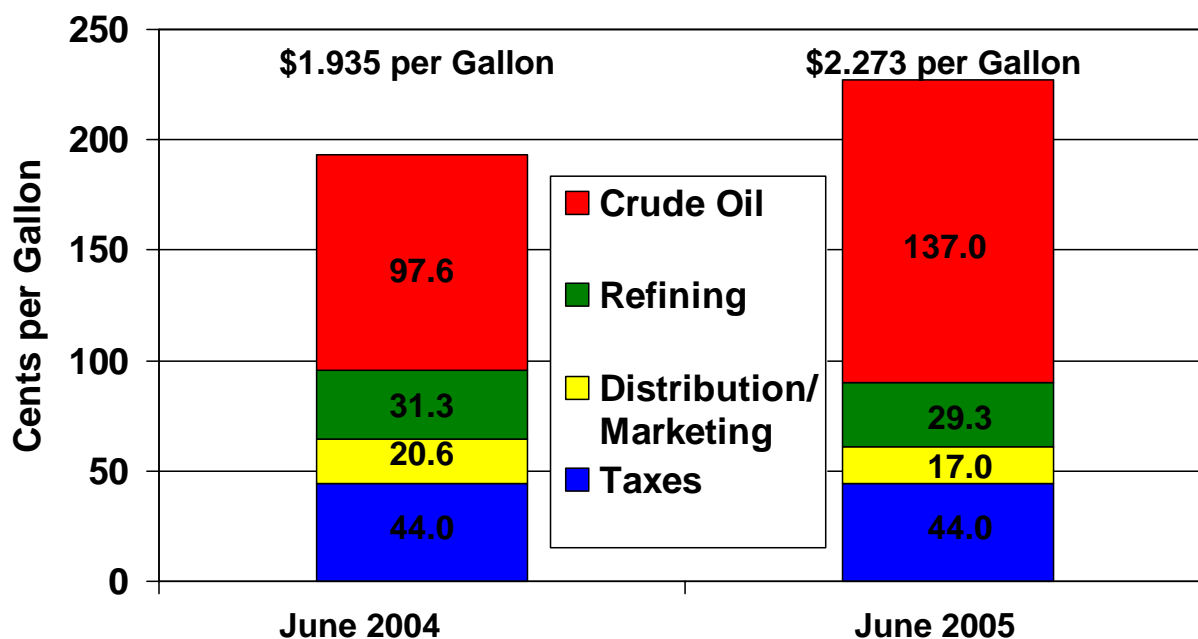
Figure 2. OPEC Spare Capacity Is Extremely Tight



Source: Energy Information Administration estimates.

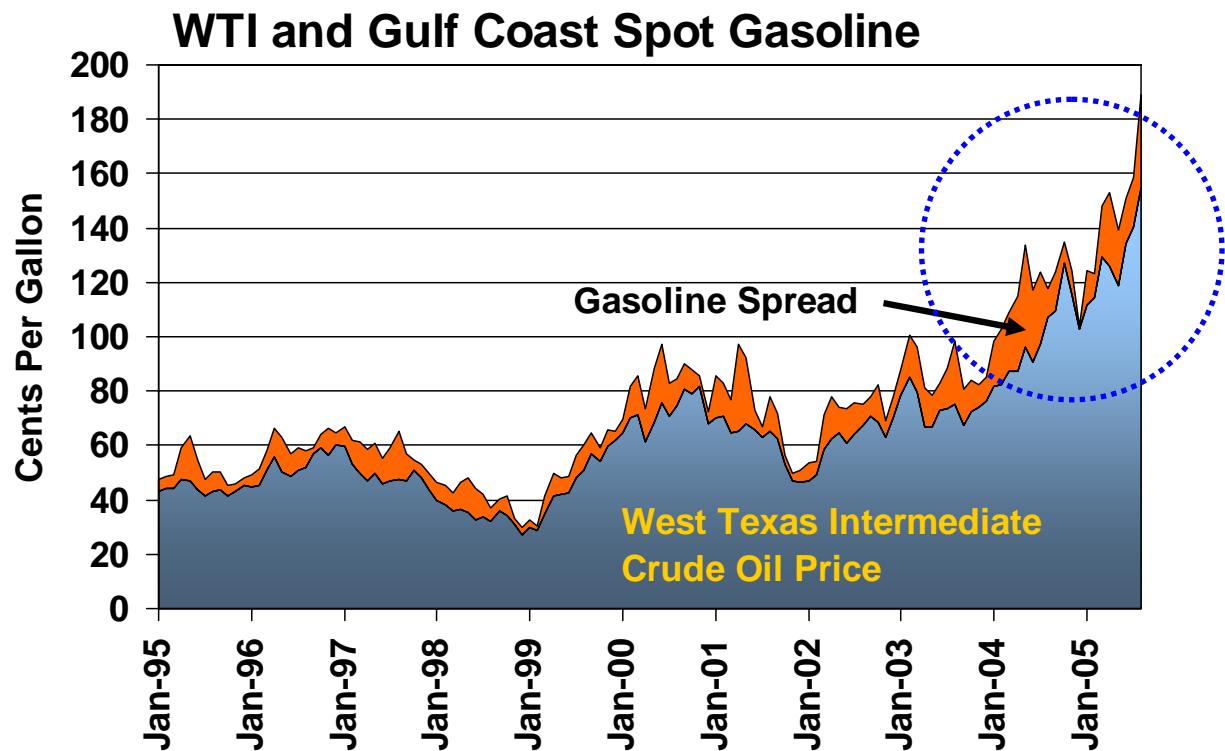
Figure 3. Crude Oil is Largest Contributor to Gasoline Price Increase Since Last Year

*Components of Retail Gasoline Prices
U.S. Average, May-August*



Source: Energy Information Administration

Figure 4. Gasoline Spreads High in 2004 and Soften Some in 2005



Source: Reuters